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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JING CHUNG CHANG and
RICHARD LEE DOMMEL

Appeal 2009-002855
Application 10/752,399
Technology Center 1700

Decided: April 27, 2010

Before CATHERINE Q. TIMM, LINDA M. GAUDETTE, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46-48, and 50-54.

We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

BACKGROUND

Claim 47 is illustrative of the invention:

47. A process of forming poly(trimethylene terephthalate) bulk continuous filament yarn comprising:

- a. providing poly(trimethylene terephthalate) chip wherein the poly(trimethylene terephthalate) has a number average molecular weight of about 29000 to about 40000, an intrinsic viscosity of about 0.95 to about 1.04 dl/g, and a melt viscosity of about 450 up to about 700 Pascals at 250°C and 48.65 per second shear rate,
- b. drying the poly(trimethylene terephthalate) chip to a water content of less than about 50 ppm,
- c. melting the poly(trimethylene terephthalate) chip in a single screw extruder,
- d. extruding the poly(trimethylene terephthalate) to form filaments;
- e. cooling the filaments,
- f. converging the filaments into yarn;
- g. drawing the filaments at a speed of greater than 3500 meters per minute, at a draw ratio of about 1.1 to about 4.0, to produce filaments having a filament denier greater than 10 and yarn having a yarn denier of at least 500;
- h. bulking the drawn filaments;
- i. cooling the bulked filaments through a cooling drum,
- j. intermingling the cooled filaments, and
- k. winding the intermingled filaments on a wind-up machine.

The Examiner relies upon the following prior art references in the rejection of the appealed claims:

Howell	WO 96/00808	Jan. 11, 1996
Howell	5,645,782	Jul. 8, 1997
Burton	5,804,115	Sep. 8, 1998
Scott	WO 99/19557	Apr. 22, 1999
Hwo	2002/0130433 A1	Sep. 19, 2002
Wandel	2002/0132116 A1	Sep. 19, 2002
Sun	2002/0147298 A1	Oct. 10, 2002

Appellants' Admission of Prior Art, (AAPA), regarding commercially available poly(trimethylene terephthalate) (PTT) as set out in the Second Information Disclosure Statement, 28 November 2005, paragraph 2, lines 4-7).

The Examiner has maintained, and Appellants seek review of, the following two alternative rejections under 35 U.S.C. § 103(a):

1) all of the claims on appeal (that is, claims 8, 11, 14, 20, 23, 24, 26, 29, 33, 41, 42, 46-48, and 50-54) as being unpatentable over the combined prior art of Howell, Hwo, Wandel, Sun, and Burton; and

2) again, all of the claims on appeal as being unpatentable over the combined prior art of Scott, AAPA, and Hwo¹.

Appellants present arguments concerning the rejections of the specified claims indicated in 1) and 2) above as a group (App. Br. 18, 19). Thus, in accordance with 37 C.F.R. § 41.37(c)(1)(vii), we select claim 47 as the representative claim on which our discussion will focus.

*The Rejection under 35 U.S.C. § 103 based on Howell, Hwo, Wandel,
Sun, and Burton*

For the reasons which follow, we vacate² this rejection.

¹ See, Examiner's Answer, p. 2, 3

The rejections set forth by the Examiner of all the claims based on two alternative overlapping groups of references does not follow the guidance set forth in Manual of Patent Examining Procedure (MPEP) § 706.02 (8th ed. rev. 6, Sept. 2007) that prior art rejections should ordinarily be confined strictly to the best available art.³

All of the claims on appeal are subject to two alternative rejections. The second rejection based on Scott, AAPA, and Hwo relies on an undisputed admission of a commercially available poly(trimethylene terephthalate) (PTT) with all the claimed characteristics as recited in claim 47, clause (a) (*see, e.g.*, Ans. 12; App. Br. 18; *generally*, Reply Br.). In the first ground of rejection, the Examiner relies on at least three separate references (Wandel, Sun, and Burton) to teach these characteristics.

The Scott reference in the second rejection is relied upon by the Examiner to teach another disputed claim feature, namely the required draw speed, as well as for its incorporation of Howell (which is the primary reference relied upon in the first rejection), which Appellants' admit "broadly" describes steps (a) through (k) as required by claim 47 as a generally known process for preparing PTT into bulk continuous filament (BCF) yarn (App. Br. 13; *see also* App. Br. 11-12).

Accordingly, in view of the Examiner's second rejection of all the claims under 35 U.S.C. § 103 relying on the undisputed AAPA to replace three references from the first rejection, with both rejections relying upon

² The term "vacate" in this context means to set aside or to void (*see, e.g.*, Black's Law Dictionary 1075 (abridged 6th ed. 1991)). When the Board vacates an Examiner's rejection, the rejection is set aside and no longer exists.

³ Redundant and/or cumulative prior art rejections are wasteful of the resources of the Examining Corps, the Appellants, and the Board.

Howell (as incorporated in Scott in the second rejection) to broadly teach the basic process steps of claim 47, we vacate the first rejection.

The Rejection under 35 U.S.C. § 103 based on Scott, AAPA, and Hwo

ISSUE ON APPEAL

Has the Examiner erred in concluding that the combined prior art would have suggested using the claimed process because:

- (1) Scott's described take up speeds of 4000 to 6000 m/min do not explicitly state that the draw speed may be above 3500 meter per minute, or
- (2) one of ordinary skill in the art would not have known how to adjust the process of Scott (or Howell) to achieve the presently claimed process using the specific PPT material of AAPA, or
- (3) Hwo would not have led anyone to modify a process to prepare BCF (bulk continuous filament) yarn since Hwo describes drawing partially-orientated yarns (POY)?

We answer all these questions in the negative.

FINDINGS OF FACT (FF)

Findings of fact throughout this opinion are supported by a preponderance of the evidence.

We refer to the Examiner's findings of fact as presented in the Final Rejection and Answer (Final Office Action 9-14; Ans. 10-16), as well as in the Response to Argument Section (Ans. 19). We add the following primarily for emphasis.

Scott is relied upon by the Examiner to teach the required draw speed of claim 47, as well as for its incorporation of Howell. Appellants' admit that Howell "broadly" describes steps (a) through (k) as required by claim

47 as a generally known process for preparing PTT into bulk continuous filament (BCF) yarn (App. Br. 13; *see also* App. Br. 11-12).

As the Examiner stated:

In response to Appellant's arguments concerning drawing [speed], Scott's teachings are clearly specifying that the speed is done with drawing as the yarn goes through the draw zone before take-up at the speed of 4,000 to about 6,000 m/min (see page 12, lines 15-18 [of Scott]). Concerning the bulking, as Howell is incorporated by Scott, Howell is relied upon for bulking of the filaments to form bulk continuous filaments (BCF).

(Ans. 19).

Appellants have not specifically challenged the Examiner's finding that the 4000 to 6000 m/min speed specified in Scott for a "spin-draw process" (Scott, p. 12, ll. 15-16) applies to drawing (*Id.*; *generally* App. Br.; Reply Br.).

It is undisputed that a source of poly(trimethylene terphthalate) (PTT) polymer with all the claimed characteristics as recited in claim 47, clause (a) was commercially available (*see, e.g.*, Ans. 12; App. Br. 18; *generally*, Reply Br.).

The Examiner relies upon Hwo only to exemplify the use of a single screw extruder for forming filaments as required in step (c) of claim 47 (Ans. 12).

PRINCIPLES OF LAW

In assessing whether a claim to a combination of prior art elements or steps would have been obvious, the question to be asked is whether the improvement of the claim is more than the predictable use of prior art elements or steps according to their established functions. *KSR Int'l Co. v.*

Teleflex, Inc., 550 U.S. 398, 417 (2007). The analysis need not seek out precise teachings directed to the specific subject matter of the claim, for it is proper to take account of the inferences and creative steps that a person of ordinary skill in the art would employ. *Id.* at 418.

ANALYSIS

Appellants' main argument is that Scott does not teach the required draw speed (App. Br. 18). This argument is not persuasive since one of ordinary skill in the art would have appreciated that Scotts' teaching of take up speeds of 4000 to 6000 m/min in a spin-draw process indicates that speeds above 3500 m/min in the draw zone were achievable (*see*, FF).

Even assuming *arguendo*, however, that Appellants were correct that Scott's take up speeds of 4000 to 6000 m/min for a spin-draw process do not suggest a corresponding draw speed for a fiber spinning process (App. Br. 18), we determine that anyone in possession of the information presented by these references would have naturally experimented to discover optimum conditions of the speed of the yarn drawing step. *See e.g., Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1368 (Fed. Cir. 2007) (discovery of an optimum value of a variable in a known process is usually obvious); *see also Dystar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006) ("[A]n implicit motivation to combine exists . . . when the 'improvement' is technology-independent and the combination of references *results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient.*" (emphasis provided)).

Appellants' contention that one of ordinary skill in the art does not know how to adjust the process of Scott (or Howell as incorporated by

reference in Scott) to achieve the presently claimed process using the specific PTT material of AAPA is not persuasive of reversible error (App. Br. 18). The use of the admittedly known, commercially available PTT (sold by Appellants as noted by the Examiner (Ans. 18)) for processing as BCF yarn in accordance with the process exemplified in Scott (modified to use a single screw extruder) would have been nothing more than using an admittedly known PTT material in accordance with its known function for the predictable result of creating a BCF yarn. *See KSR*, 550 U.S. at 417.

Appellants' final contention is that Hwo adds nothing that would lead one to modify a BCF process, such as taught in Scott (App. Br. 18). This contention is also unavailing since the Examiner only relies upon Hwo in this rejection to exemplify a single screw extruder for extruding yarn (*see*, FF). Appellants have not provided any persuasive technical reasoning or evidence that the use of a single screw extruder, as taught in Hwo, would have been undesirable or unworkable for the known extrusion step in a process of preparing PTT into BCF yarn. *See KSR*, 550 U.S. at 420-421 (noting that one of ordinary skill in the art is "also a person of ordinary creativity, not an automaton").

In light of these circumstances, the Examiner's position that one of ordinary skill in the art would have modified Scott's process of forming PPT into BCF yarn (which describes the use of draw speeds above 3500 m/min as required by claim 47) to use the admittedly known and commercially available PTT material, as well as to use a single screw extruder, with a reasonable expectation of obtaining a viable PTT BCF yarn, is reasonable. Further, the artisan would have had a reasonable expectation that the drawing speed claimed would have been effective in the process of

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Scott/AAPA/Hwo. *Cf. Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364 (Fed. Cir. 2007) (the expectation of success need only be reasonable, not absolute).

CONCLUSION

The weight of the evidence supports the Examiner's findings and conclusion of obviousness as to claim 47 based the applied prior art of Scott, AAPA and Hwo. We therefore affirm the Examiner's rejection of all the claims on under 35 U.S.C. § 103.

ORDER

The Primary Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a).

AFFIRMED

PL Initial:
sld

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